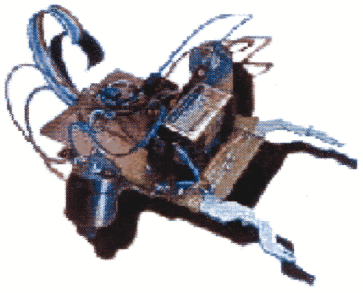
# 2001 Robotics Competition

*"The idea of Robotics is to improve robo-genetic stock through stratified competition and have an interesting time in the process."*
– Mark Tilden, Los Alamos National Laboratory



## Program Description

The robotics competition, cosponsored by the Los Alamos National Laboratory and the Santa Fe Art Institute and funded by the US Department of Energy Defense Programs, is aimed at growing and recruiting future Laboratory employees. The primary objective of the competition is to create excitement and interest in science by exposing students to the basics of robotic technology, with the goal of recruiting students into scientific academic pursuits that will lead to future careers at the Laboratory.

The competition is structured as a four-day, graded-level series of workshops and competitions, with the more advanced students (grades 6–12) attending for three days and the beginning students (ages 6–12) attending a basic one-day workshop. While it is called a "competition," the emphasis is on innovation and creativity. The four-day competition culminates each year with local competitions where each student compares his/her work to that of classmates. This friendly competition provides the incentive to create designs that make robots more efficient and capable—a major tenant in the robotic philosophy.

The recruitment strategy for the competition includes site visits and robotic demonstrations at various schools in northern New Mexico; press releases through the Laboratory Public Affairs Office as well as local newspapers like the *La Gente*, Las Vegas, New Mexico; word of mouth; and the robotics website http://set.lanl.gov/programs/robotics/. Students were successfully recruited from Arizona, Colorado, Texas, Kansas, and New Mexico for this year's competition.

## Performance Objectives and Milestones

The Robotics Competition is designed specifically to involve the youth of northern New Mexico and surrounding states in a technology that they can understand and that will excite them—"turn them on" to math and science. It is important to capture the interest of students in science at an early age, and robotics has proven to be a technology that captivates the attention of young minds. By involving youth in such an exciting and touchable technology, we can potentially change their life goals and bring them into the technology base for the Laboratory employment pipeline. This objective is met through

- tracking educational and career aspirations of program participants via a database and ongoing communications;
- inviting Laboratory technical staff members and technicians to attend workshop activities, thus promoting positive relationships and exposing the students and parents to a larger network of scientific knowledge;
- developing a program summer internship component; and
- recruiting the most promising students into the Laboratory pipeline.

## FY01 Milestones

Annual Robotics Competition
May 3–6, 2001
Navajo Nation Workshop
June 15, 2001
UNM-LA Children's College
August 27–September 7, 2001
Floyd, NM, Workshop
November 2001
FY02 Annual Robotics Competition
May 2002

## Highlights of this Year's Accomplishments

The seventh annual Los Alamos Robotics Competition took place in Santa Fe, New Mexico, on May 3–6, 2001. The event had two components: (1) students from grades 6–12 attended the Thursday, Friday, and Saturday advanced workshops, and (2) younger roboticists (ages 6–12) and their parents attended the Sunday afternoon workshop. The competition culminated with informal competitions for both the "solarrollers" and the aesthetic "solarflapper" butterflies on Sunday afternoon.

Seventy-three students from New Mexico and adjoining states attended an advanced three-day workshop. A series of graded-level kits were provided to students as they progressed through the technology, starting with simple solar-engined cars and butterflies and ending with four-motor walkers with heads that detected light sources and guided the walker to follow them. Mentors were available to work with students on demand, providing an intense and satisfying hands-on experience for the participants.

The half-day Sunday workshop had twenty-seven student attendees, each with least one parent or guardian. These participants built the simplest kits—the solar-engined cars and butterflies.

The FY01 competition enjoyed its second year of cosponsorship by the Santa Fe Art Institute (SFAI), who provided space in which to conduct the workshops, dorm space for the workshop mentors, and a lecture hall where students heard nightly talks on robotics and kinetic art. SFAI is an independent, educational, nonprofit organization that annually selects an idea to explore through seminars, residencies, studio/workshops, publications, community lectures, and exhibitions. The competition is fortunate to have the continued in-kind support of SFAI.

## 2001 Robotics Competition Attendance Figures

**Advanced Workshop**
73 student participants, 9 teachers

**Beginners Workshop**
27 student participants

In addition to the annual competition, a robotics workshop was held during the annual University of New Mexico at Los Alamos (UNM-LA) Children's Science Camp, August 27–September 7, 2001. UNM-LA provided robotic kits for more than 400 student participants. Older students who have taken part in past robotic workshops and competitions were used as mentors for the camp, thus allowing the older students to enjoy a mentor experience and play a leadership role. Patricia Chavez of UNM-LA and director of the Children's College said, "the students really enjoyed the hands-on experience of building, testing, and racing the robots. Every year this is one of the most favorite of the classes we offer. Next year we hope to have at least one week of robotics during our Children's College."

Other robotics workshops, sponsored by the Northern New Mexico Systemic Initiative, were held in Shiprock, New Mexico, with over 100 Native American students in attendance. During that same trip 40 high school students from Gallup, New Mexico, were able to interact with scientists from the Los Alamos National Laboratory and students from past robotic events who were serving as mentors. Headlines from the *San*

*Juan Sun* in the Four Corners area stated, "Navajo Nation, Los Alamos scientists work together for youth."

## Comments
## 2001 Robotics Competition

*"I enjoy building robotics and then test them to see if they work"*

*"The competition is always a lot of fun and I like the fact that cheating and making your robot better is encouraged at the competitions."*

*"My teacher uses the activities on the robotic web site. They are fun and we interact with scientists like Mark Tilden from LANL."*

*"I like working with the students who help us build since they are students just like us."*

*"Robotics is fun!"*

*"I never thought my robot would work but after two days it did!!!"*